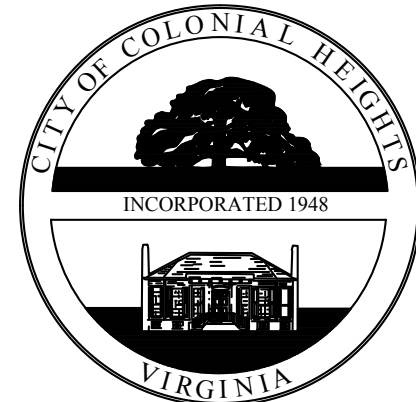


<b><u>SITE DATA</u></b>	
<b><u>CONSULTANT:</u></b>	BOWMAN CONSULTING GROUP, LTD. 3951 WESTERRE PARKWAY, SUITE 150 RICHMOND, VIRGINIA 23233 CONTACT: JONATHAN JACKSON PHONE#: (804)-616-3240 FAX#: (804)-270-2008 EMAIL: jjackson@bowmancg.com
<b><u>TAX MAP #:</u></b>	N/A
<b><u>ACREAGE:</u></b>	
ACREAGE IN RIGHT OF WAY:	_____ N/A
ACREAGE IN PAVED AREA:	_____ N/A
TOTAL ACREAGE:	_____ N/A
<b><u>ZONING:</u></b>	N/A
<b><u>USE:</u></b>	ROADWAY & UTILITIES
<b><u>UTILITIES:</u></b>	
CITY WATER	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> GAS <input checked="" type="checkbox"/> <input type="checkbox"/>
CITY SEWER	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> PHONE <input checked="" type="checkbox"/> <input type="checkbox"/>
POWER	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> CABLE <input checked="" type="checkbox"/> <input type="checkbox"/>
<b><u>FLOOD PLAIN INFORMATION:</u></b>	
FEMA FLOOD PLAIN	
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
FLOOD ZONE: _____	
FIRM MAP #: _____	
DATE: _____	
<b><u>TOPOGRAPHICAL INFORMATION:</u></b>	
SURVEYED BY: <u>BOWMAN CONSULTING GROUP</u>	
DATE OF SURVEY: <u>MAY 13, 2014</u>	
DATUM: <u>NAVD 88</u>	
<b><u>WETLAND INFORMATION:</u></b>	
WETLANDS LOCATED ONSITE?	
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
ACREAGE OF IMPACTS: <u>0</u>	
<b><u>RESOURCE AREAS:</u></b>	
RPA: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> RMA: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
<b><u>CHESAPEAKE BAY PRESERVATION AREA:</u></b>	
COMPLIANCE HAS BEEN ACHIEVED BY: AVOIDANCE	

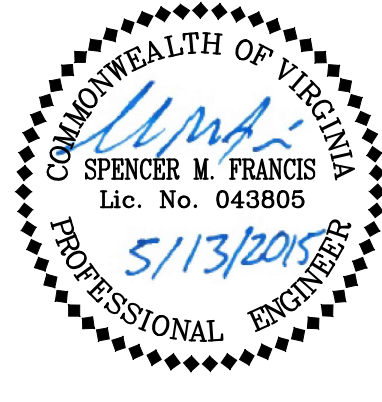
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## FINAL BID SET

FEDERAL AID #:	N/A
STATE UPC #:	PC #XXXXXX
CITY PROJECT#:	SP #XXXXXX



DEPARTMENT OF PUBLIC WORKS  201 JAMES AVENUE COLONIAL HEIGHTS, VA. 23834 CONTACT: TODD FLIPPEN PHONE: (804) 520-3224 FAX: (804) 520-9237 EMAIL: flippent@colonialheightsva.gov WEB: www.colonialheightsva.gov	
DIRECTOR OF PUBLIC WORKS / CITY ENGINEER	
WILLIAM (CHUCK) E. HENLEY, P.E.	
APPROVED FOR CONSTRUCTION	
_____ DIRECTOR OF PUBLIC WORKS / CITY ENGINEER	_____ DATE
RECOMMENDED FOR APPROVAL	
_____ ASSISTANT DIRECTOR OF PUBLIC WORKS	_____ DATE
_____ MAINTENANCE AND OPERATIONS	_____ DATE
APPROVAL STAMP	



**Bowman**  
CONSULTING

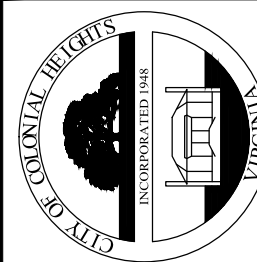
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[www.bowmanconsulting.com](http://www.bowmanconsulting.com)


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3951 Westerre Parkway  
Suite 150  
Richmond, Virginia 23233  
Phone: (804) 616-3240  
Fax: (804) 270-2008

SUBMITTAL DATE

DATE	REVISION
05/01/2015	PROGRESS SET
05/06/2015	BID SET
05/13/2015	FINAL BID SET



DRAWN
DF, JD, JF, JW, M
DESIGNED
DF, JW, MT
CHECKED
SF, JJ
SCALE
NONE

MISS UTILITY OF VIRGINIA	DATE RECEIVED STAMP
	
CALL BEFORE YOU DIG 811	

IN ACCORDANCE WITH SEC. 10.1-563 AND 10.1-566 OF THE CODE OF THE STATE OF VIRGINIA, I HEREBY CERTIFY THAT I AM THE RESPONSIBLE LAND DISTURBER FOR THIS PROJECT AND THAT I HAVE A VALID CERTIFICATION FROM THE STATE OF VIRGINIA.

SIGNATURE	DATE
NAME (PRINT) /CERTIFICATION #	CONTACT NUMBER

TO THE BEST OF MY KNOWLEDGE, THIS PLAN SATISFIES ALL ZONING  
CODE REQUIREMENTS, CONDITIONS OF APPROVAL, AND PROFFERS  
LOT NUMBERS, BLOCK LETTERS / NUMBERS, ROAD NAMES, ETC.

  
SIGNATURE

SPENCER M. FRANCIS, P.E.	5/13/2015
NAME (PRINT)	DATE

DATE	DESCRIPTION
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# CITY OF COLONIAL HEIGHTS

DEPARTMENT OF PUBLIC WORKS

ENGINEERING &amp; DEVELOPMENT DIVISION

# BRUCE AVENUE DRAINAGE IMPROVEMENTS

# TITLE SHEET

SHEET NO.

1 OF 31







ROADWAY

Mobilization	1.0	LS
Construction Surveying	1.0	LS
Clearing & Grubbing	1.0	LS
Asph. Conc. 2" Mill and Overlay	310.0	SY
Asph. Conc. TY. SM-9.5D	340.0	TON
Asph. Conc. TY. BM-25.0A	585.0	TON
Asphalt Tack	405.7	GAL
Aggr. Base TY. 1, No 21B	1,780.0	TON
Std. Comb. Curb & Gutter CG-6	2,800.0	LF
Rad. Comb. Curb & Gutter CG-6	85.0	LF
Entr. Gutter CG-9D - modified	130.0	SY
Hydr. Cem. Conc. Sidewalk 4"	45.0	SY
6" Concrete Driveway Replacement	455.0	SY
Removal of Sidewalk and Entrance	500.0	SY
Removal of Comb. Curb & Gutter	3,015.0	LF
Demolition of Pavement (Combination)	4,258.8	SY
Topsoil, 2" depth	0.3	ACRE
Seed	65.0	LBS.
10-10-10 Fertilizer	0.2	TON
Lime	0.6	TON
Inlet Protection	13	EA
Culvert Inlet Protection	2	EA
Silt Fence	375	LF
Tree Removal	3	EA
Allaying Dust	100.0	HR
Class 1 Backfill	2,370	CY
Regular Excavation	3,950	CY

MOT

Construction Signs	108	EA
Aggregate 21B	300	TON
Group 2 Channelizing Devices	80	DAY
Portable Changeable Message Sign	640	HR
Flagger Service	640	HR

STORM DRAIN

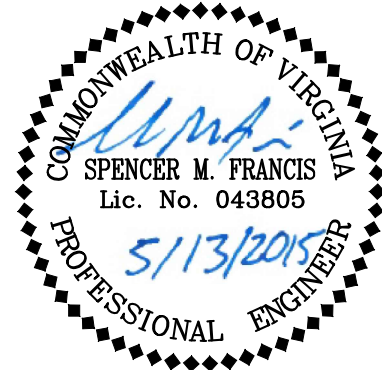
Remove Existing Storm Structures	13	EA
Remove Existing Strom Pipe & Backfill Trench	1,006	LF
Storm Sewer Pipe 12"	29	LF
Storm Sewer Pipe 15"	149	LF
Storm Sewer Pipe 18"	244	LF
Storm Sewer Pipe 24"	41	LF
Storm Sewer Pipe 30"	455	LF
Storm Sewer Pipe 36"	307	LF
Storm Sewer Pipe 42"	318	LF
Storm Sewer Pipe 49"x29"	36	LF
Storm Sewer Pipe 53"x34"	71	LF
Drop Inlet, DI-1	1	EA
Drop Inlet, DI-2A	2	EA
Drop Inlet, DI-2B	1	EA
Drop Inlet, DI-3C, L=6'	2	EA
Drop Inlet, DI-4A	1	EA
Drop Inlet, DI-4B, L=8'	1	EA
Drop Inlet, DI-4C, L=8'	3	EA
Drop Inlet, DI-7	1	EA
48" Manhole	6	LF
72" Manhole	14	LF
84" Manhole	9	LF
Junction Box, JB-1	1	EA
Standard Endwall for Pipe Culverts	0.8	CY
Flared End Section	1	EA
Manhole Frame and Cover	6	EA
Minor Structure Excavation	715	CY

WATER

8" C-900 PVC Water Main	960	LF
6" C-900 PVC Water Main	40	LF
Adjust Water Main for Sewer Installation	1	LS
Maintain Water Service During Construction	1	LS
8" Gate Valve with Valve Box	5	EA
Meter Box and Setting	2	EA
Water Service Line (2" Dia. and Smaller)	470	LF
Remove Existing Water Line & Backfill Trench	950	LF
Remove Existing Fire Hydrant	1	EA
Remove and Replace Existing Fire Hydrant	1	EA
Fire Hydrant Assembly	3	EA

SANITARY SEWER

8" SDR-35 Sanitary Sewer	781	LF
8" DIP Sanitary Sewer	77	LF
Sanitary Sewer Cleanout	23	EA
Sanitary Sewer Lateral	575	LF
48" Manhole	37	LF
Manhole Frame and Cover	5	EA
Remove Existing Sanitary Sewer	781	LF
Manhole Reconstruction	1	EA
Remove Manhole	3	EA
Maintain Gravity Sewer Service During Construct	1	LS



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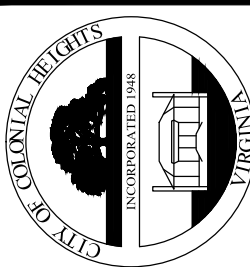
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DF, JD, JF, JW, MT  
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SF, JJ  
SCALE  
NONE

CITY OF COLONIAL HEIGHTS  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING & DEVELOPMENT DIVISION

BRUCE AVENUE DRAINAGE IMPROVEMENTS  
SUMMARY OF QUANTITIES

SHEET NO.

3 OF 31



Alignment: Bruce Ave  
Description:

Tangent Data  
Start: 9+75.000 3614486.551 11799195.242 End: 11+50.000 3614613.263 11799315.945  
Length: 175.000 Course: N 43° 36' 31.3781" E

Tangent Data  
Start: 11+50.000 3614613.263 11799315.945 End: 13+00.000 3614725.208 11799415.786  
Length: 150.000 Course: N 41° 43' 44.6692" E

Tangent Data  
Start: 13+00.000 3614725.208 11799415.786 End: 13+60.043 3614768.683 11799457.199  
Length: 60.043 Course: N 43° 36' 31.3781" E

Curve Point Data  
PC: 13+60.043 3614768.683 11799457.199  
RP: 3614650.049 11799581.739  
PT: 14+70.540 3614819.649 11799553.105  
Circular Curve Data  
Delta: 36° 48' 30.0544" Type: RIGHT  
Radius: 172.000  
Length: 110.497 Tangent: 57.231  
Mid-Ord: 8.797 External: 9.271  
Chord: 108.607 Course: N 62° 00' 46.4053" E

Tangent Data  
Start: 14+70.540 3614819.649 11799553.105 End: 17+74.898 3614870.317 11799853.216  
Length: 304.358 Course: N 80° 25' 01.4325" E

Alignment: Battery Pl  
Description:

Tangent Data  
Start: 00+50.880 3613252.276 11800253.780 End: 10+00.000 3614004.571 11799675.095  
Length: 949.120 Course: N 37° 34' 06.4140" W

Tangent Data  
Start: 10+00.000 3614004.571 11799675.095 End: 13+58.996 3614289.600 11799456.837  
Length: 358.996 Course: N 37° 26' 33.3341" W

Curve Point Data  
PC: 13+58.996 3614289.600 11799456.837  
RP: 3614244.002 11799397.290  
PT: 13+74.010 3614300.531 11799446.581  
Circular Curve Data  
Delta: 11° 28' 12.9207" Type: LEFT  
Radius: 75.000  
Length: 15.015 Tangent: 7.532  
Mid-Ord: 0.375 External: 0.377  
Chord: 14.989 Course: N 43° 10' 39.7945" W

Tangent Data  
Start: 13+74.010 3614300.531 11799446.581 End: 18+80.177 3614633.187 11799065.077  
Length: 506.167 Course: N 48° 54' 46.2548" W

Curve Point Data  
PC: 18+80.177 3614633.187 11799065.077  
RP: 3614661.451 11799089.722  
PT: 19+09.814 3614659.076 11799052.297  
Circular Curve Data  
Delta: 45° 16' 55.2794" Type: RIGHT  
Radius: 37.500  
Length: 29.637 Tangent: 15.641  
Mid-Ord: 2.890 External: 3.131  
Chord: 28.872 Course: N 26° 16' 18.6151" W

Tangent Data  
Start: 19+09.814 3614659.076 11799052.297 End: 23+47.076 3615095.460 11799024.607  
Length: 437.261 Course: N 03° 37' 50.9754" W

Alignment: Maple Ln  
Description:

Tangent Data  
Start: 10+00.000 3614518.286 11797954.259 End: 21+60.853 3614591.578 11799112.796  
Length: 1160.853 Course: N 86° 22' 48.6240" E

### SURVEYOR'S NOTES

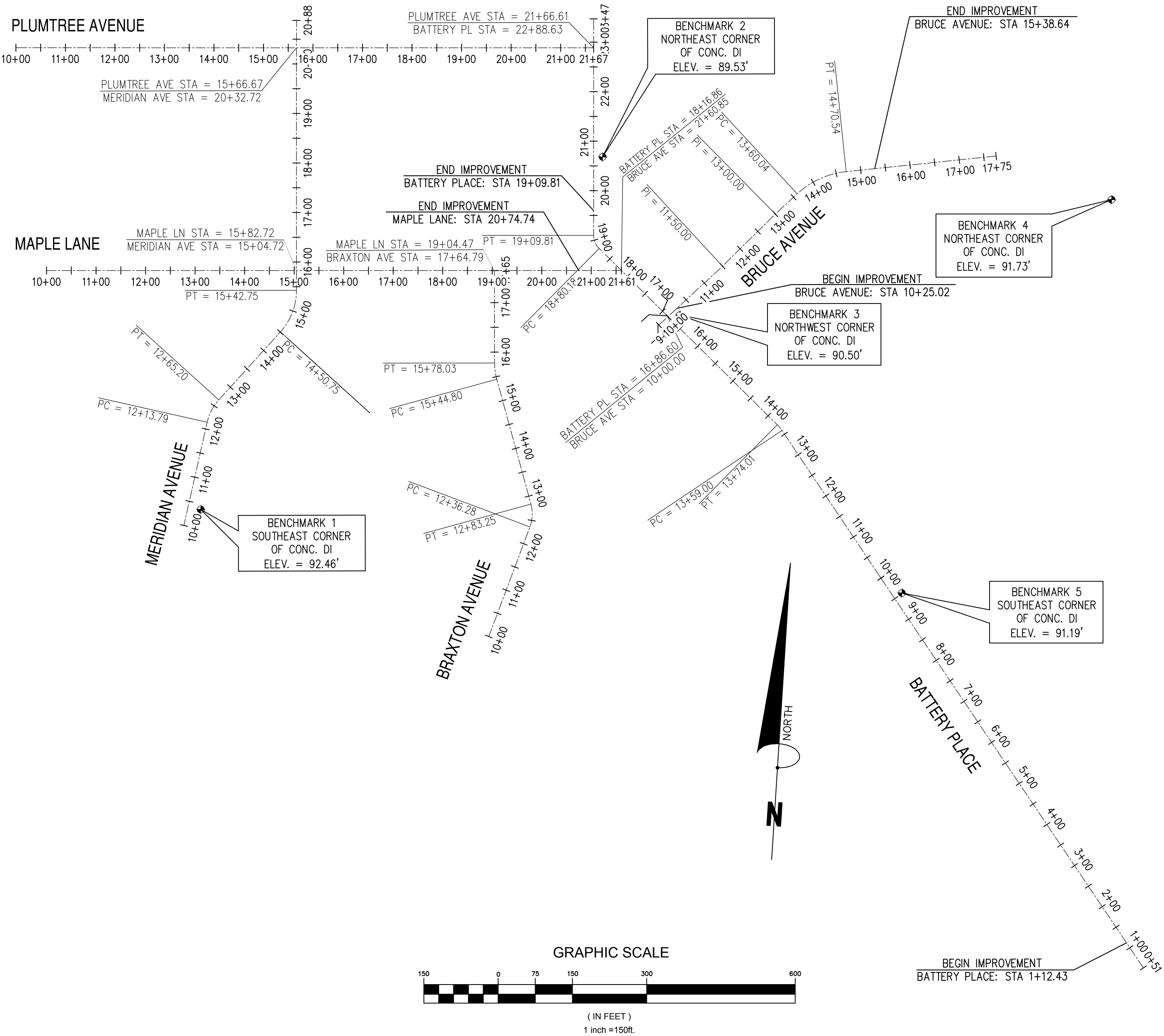
- NORTH MERIDIAN INFORMATION AS SHOWN HEREON IS BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD 83. VERTICAL DATUM USED IS NAVD 88.
- THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND NO PROPERTY OR EASEMENT RESEARCH WAS PROVIDED BY THE CITY.
- THIS DOCUMENT IS AN EXHIBIT OR PARTIAL TOPOGRAPHIC SURVEY AND IS TO SUPPLEMENT A PREVIOUS TOPOGRAPHIC SURVEY OBTAINED BY THE CITY OF COLONIAL HEIGHTS FOR DRAINAGE IMPROVEMENTS. THIS SURVEY IS NOT INTENDED FOR RECORDING OR TO ASSIST IN THE CONVEYANCE OF PROPERTY. THIS DOES NOT REPRESENT A BOUNDARY SURVEY AND NOT ALL PROPERTY CORNERS WERE RECOVERED. MISSING CORNERS WILL NOT BE SET.
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- UNDERGROUND UTILITY INFORMATION SHOWN IS BASED ON PAINTED MARKS BY MISS UTILITY 05/09/14 AND LOCATED BY BOWMAN CONSULTING. THERE MAY BE OTHER UNDERGROUND UTILITIES PRESENT THAT ARE NOT SHOWN. BOWMAN CONSULTING GROUP DOES NOT GUARANTEE THE ACCURACY OF THE MARKED UTILITIES, OR THAT ALL UTILITIES WERE MARKED AT TIME OF SURVEY.

### SURVEYOR'S CERTIFICATE

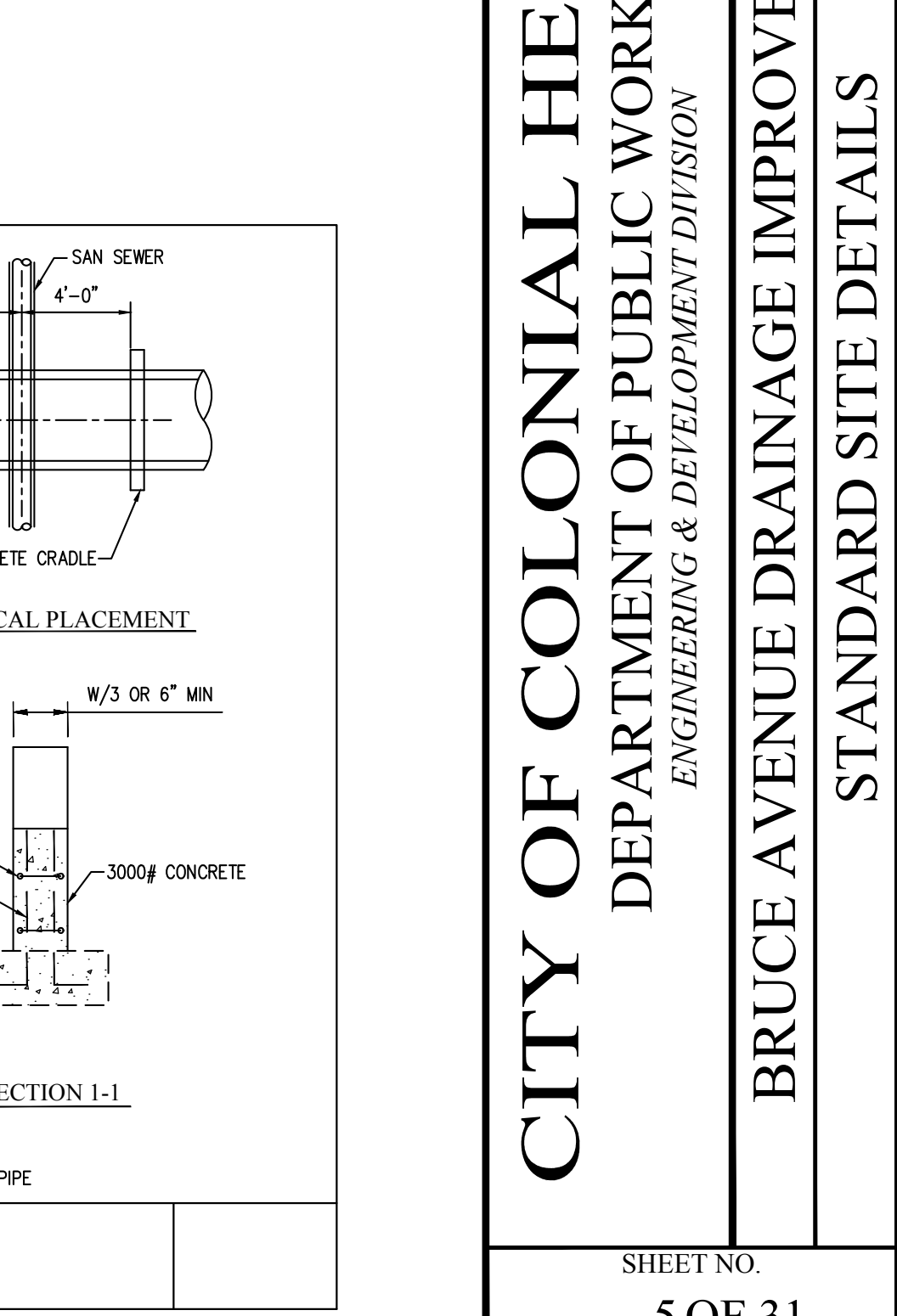
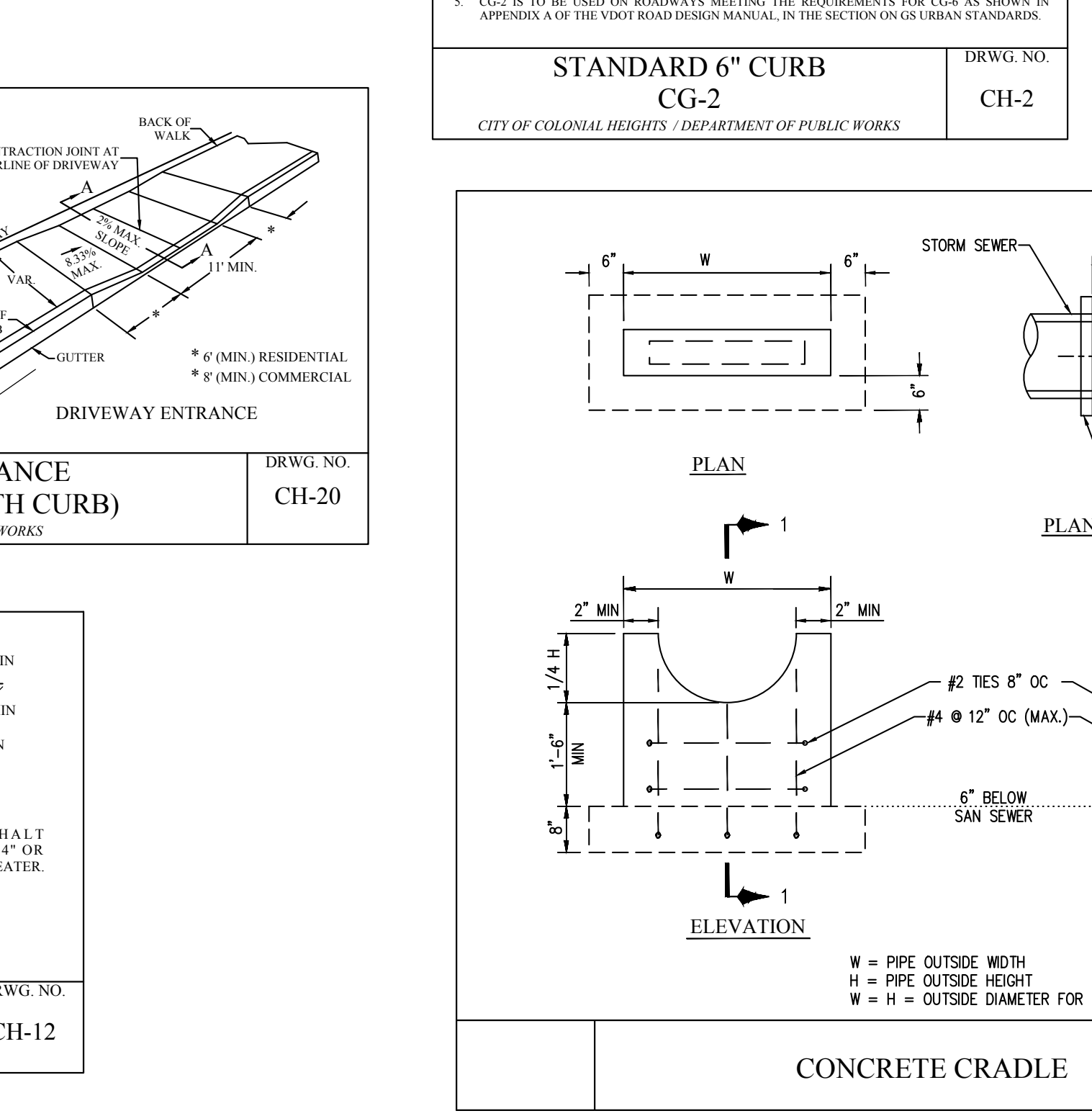
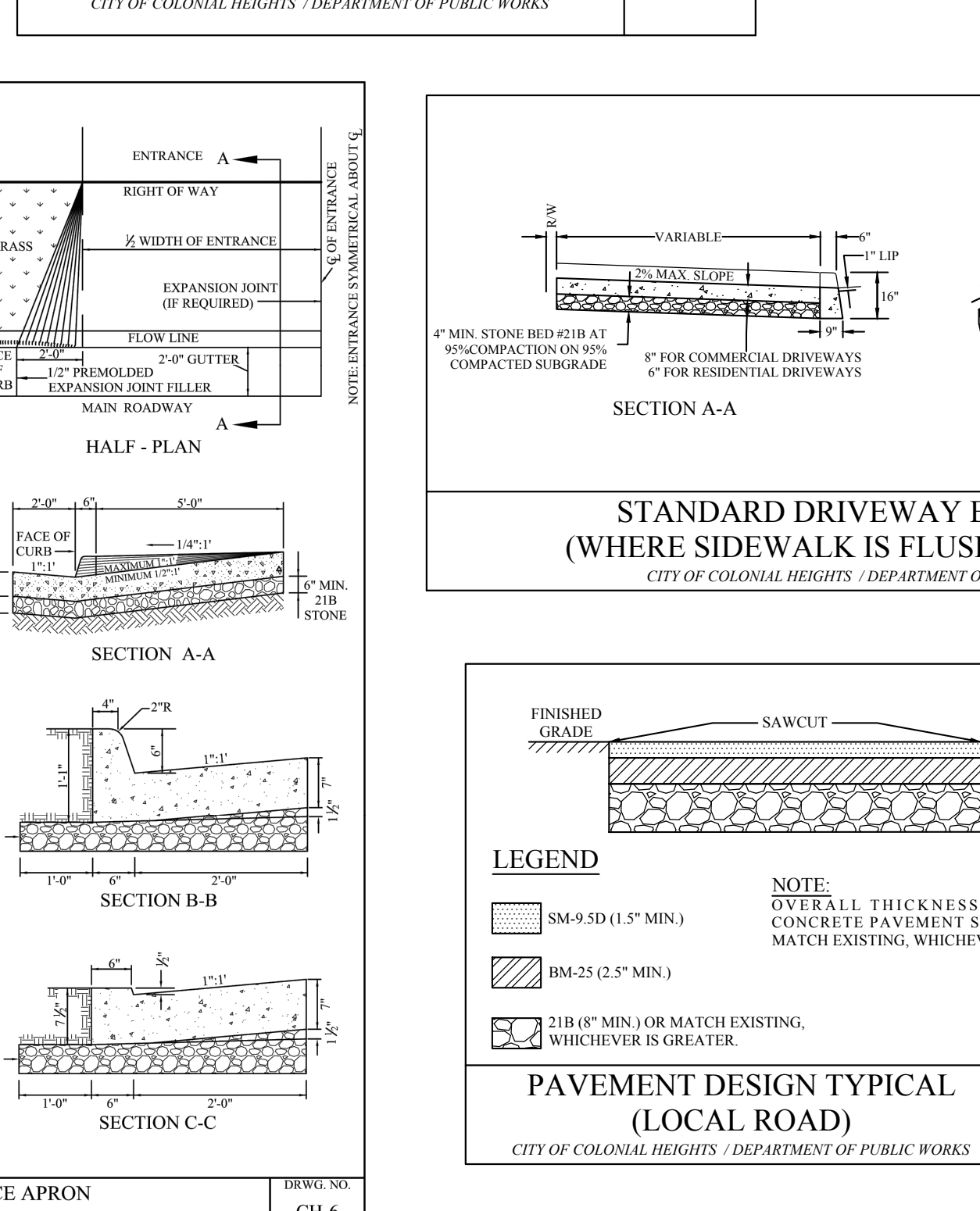
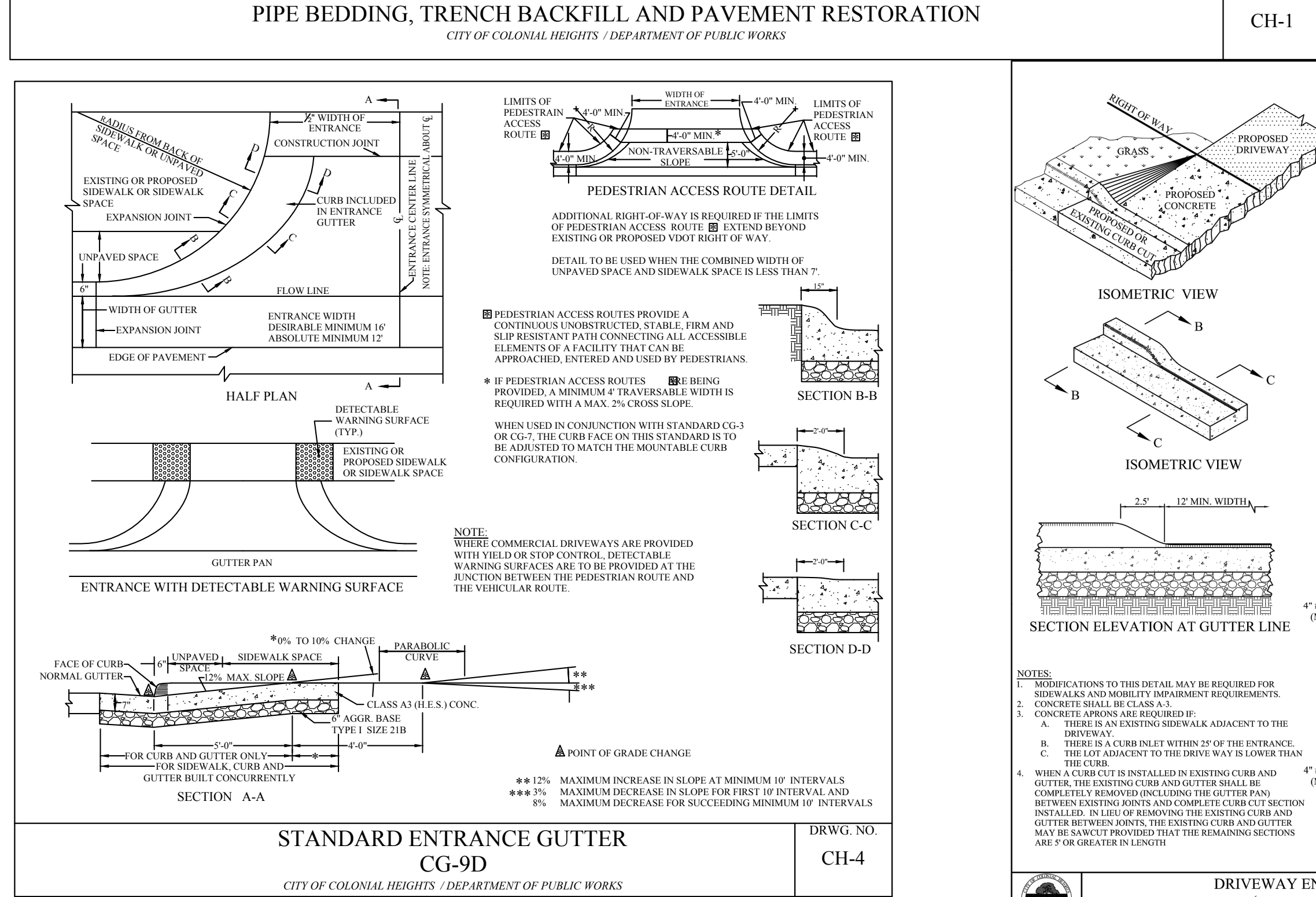
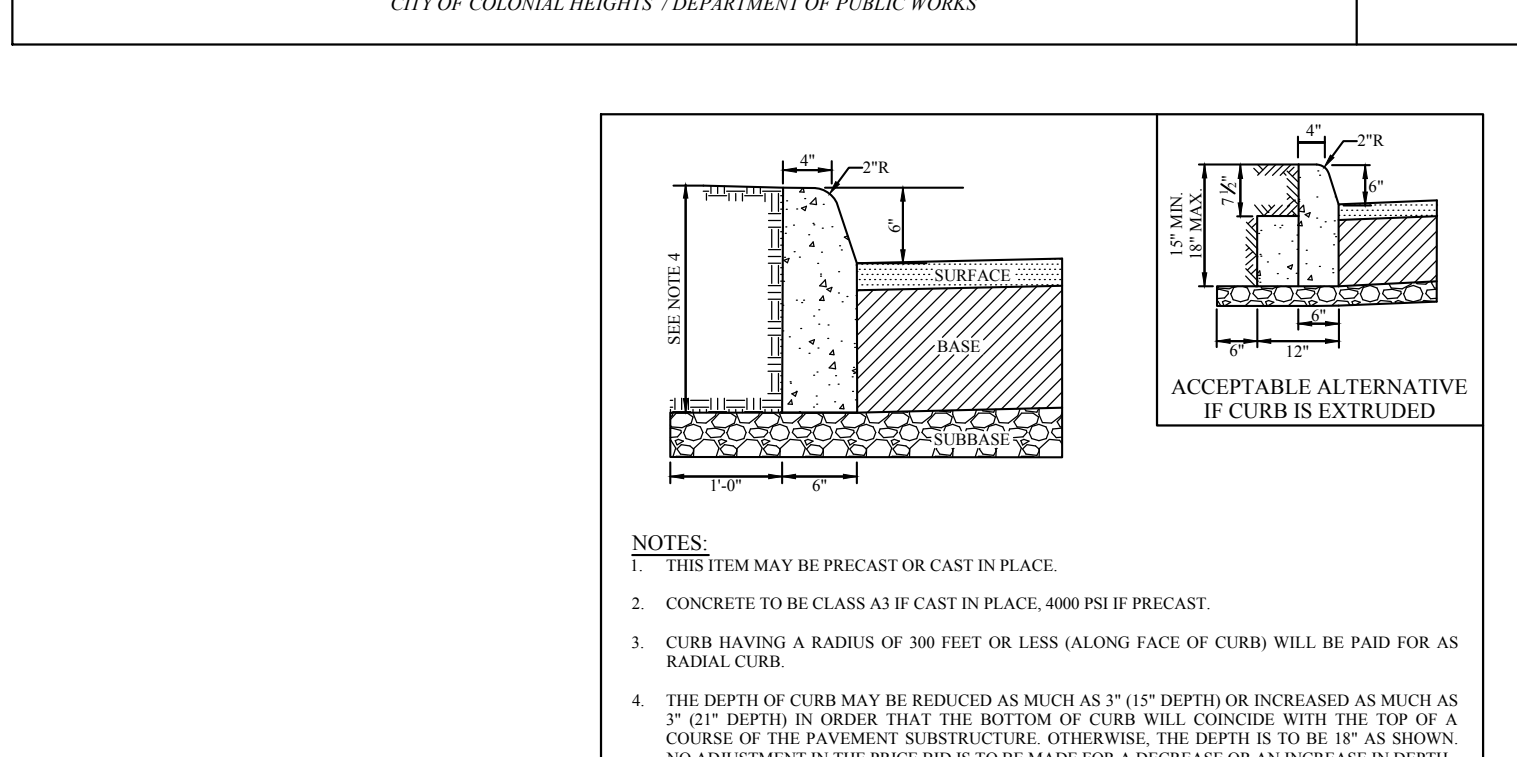
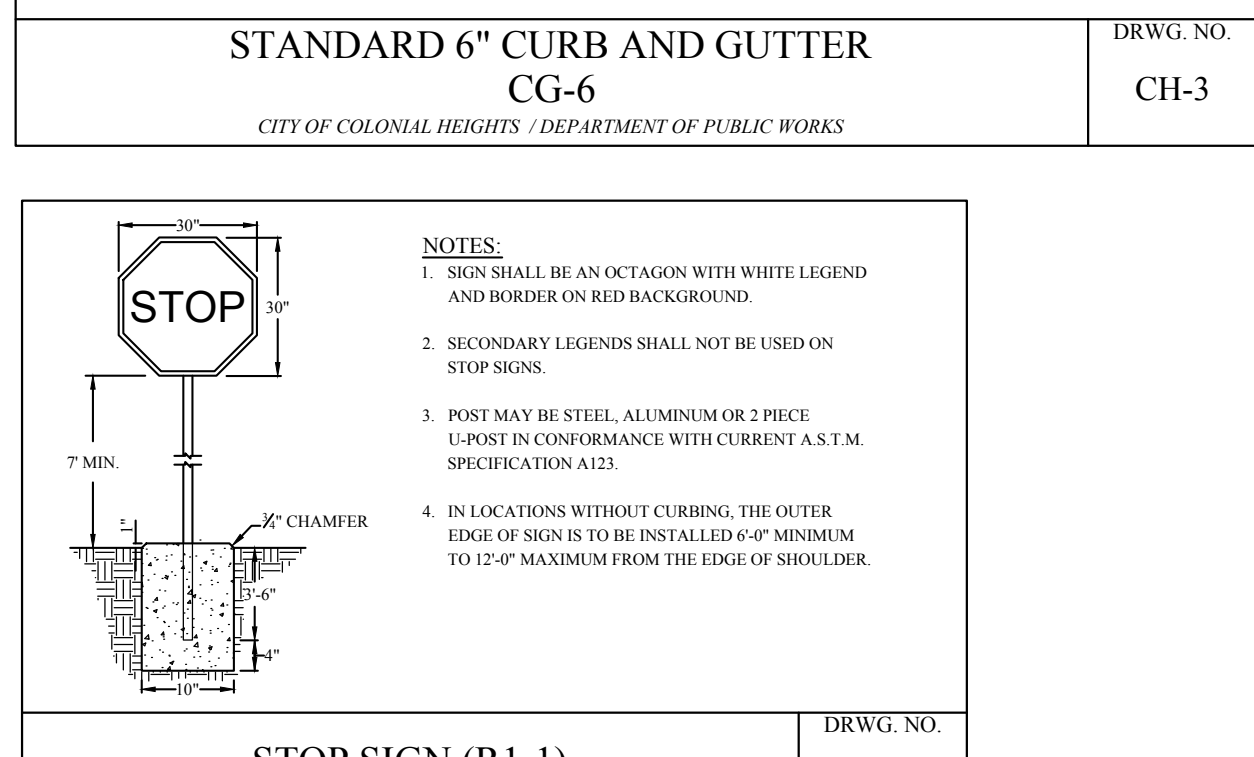
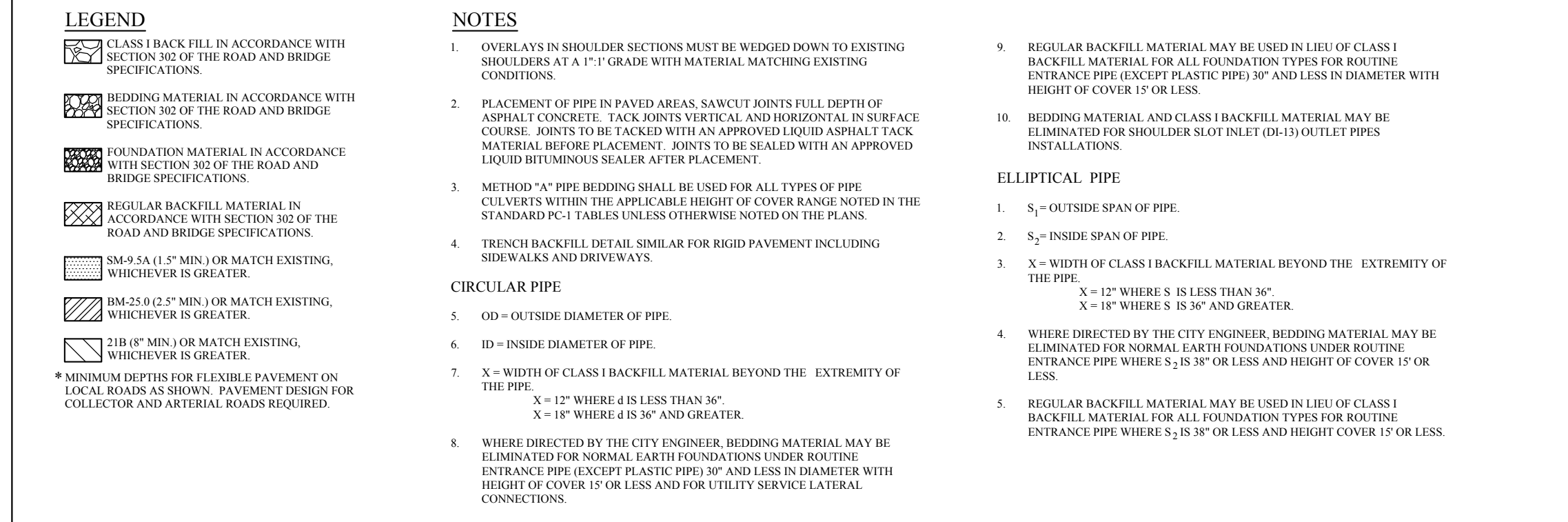
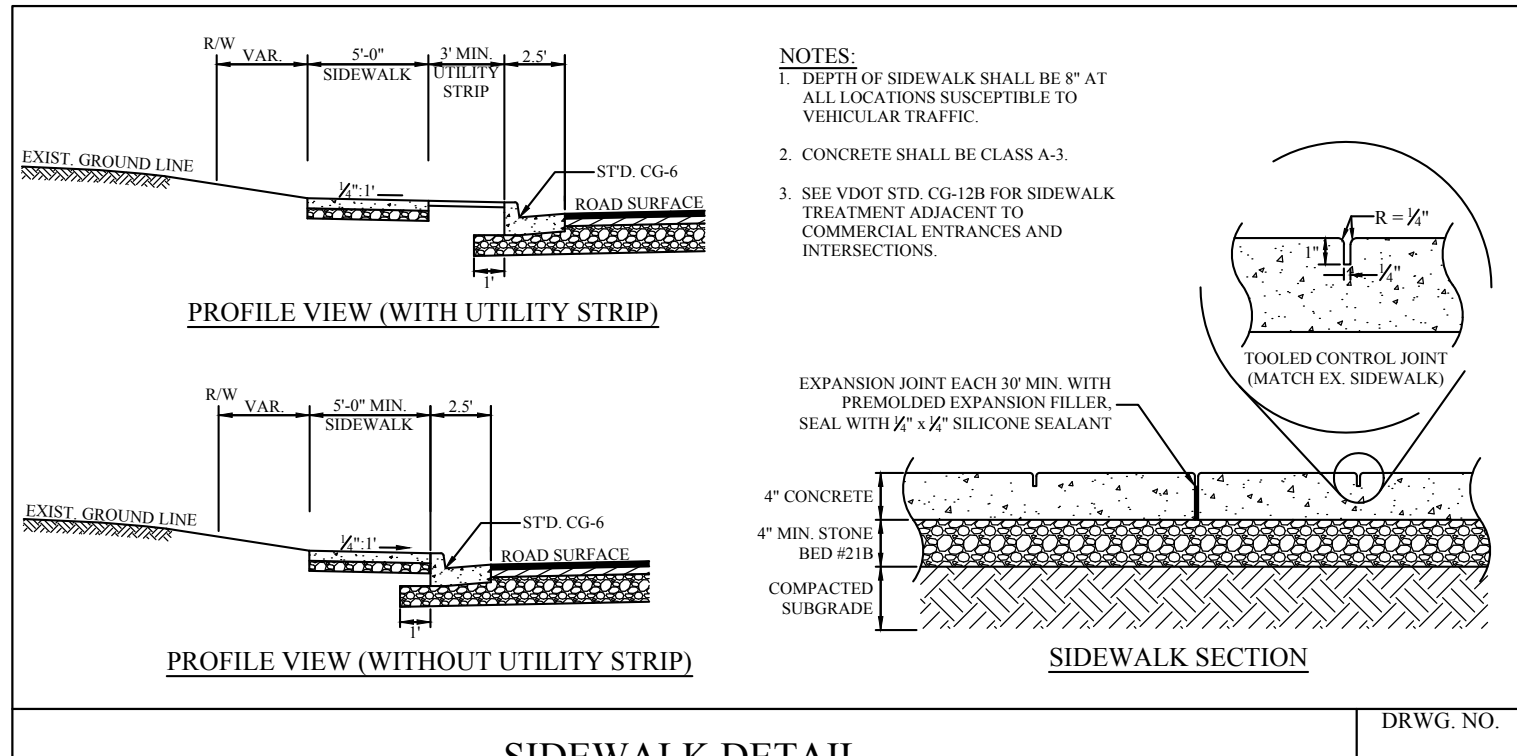
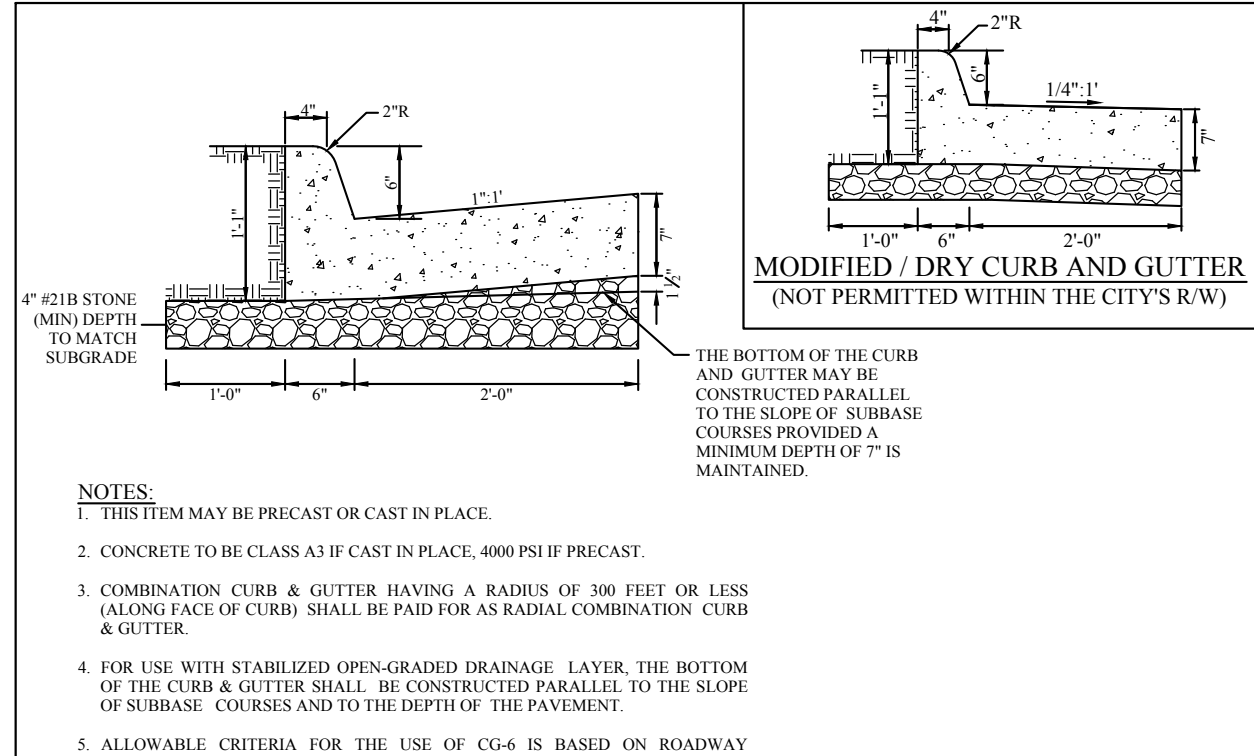
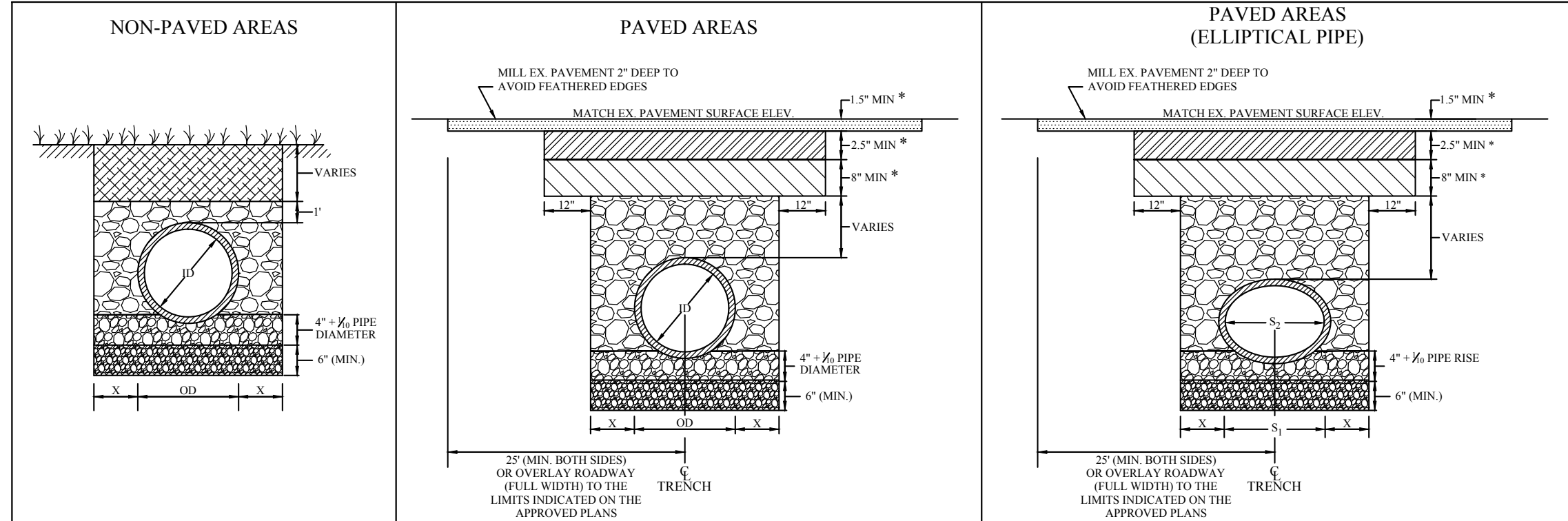
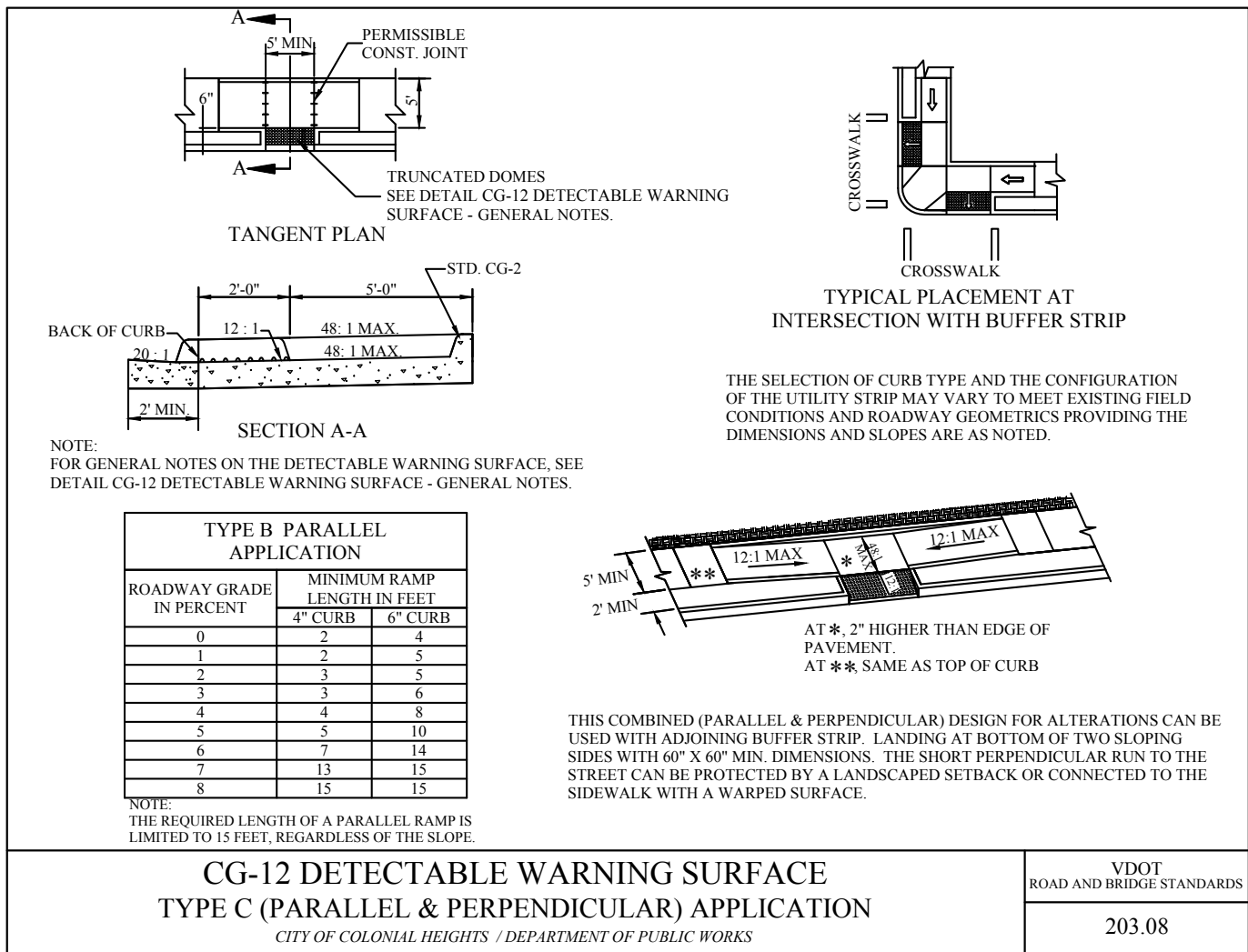
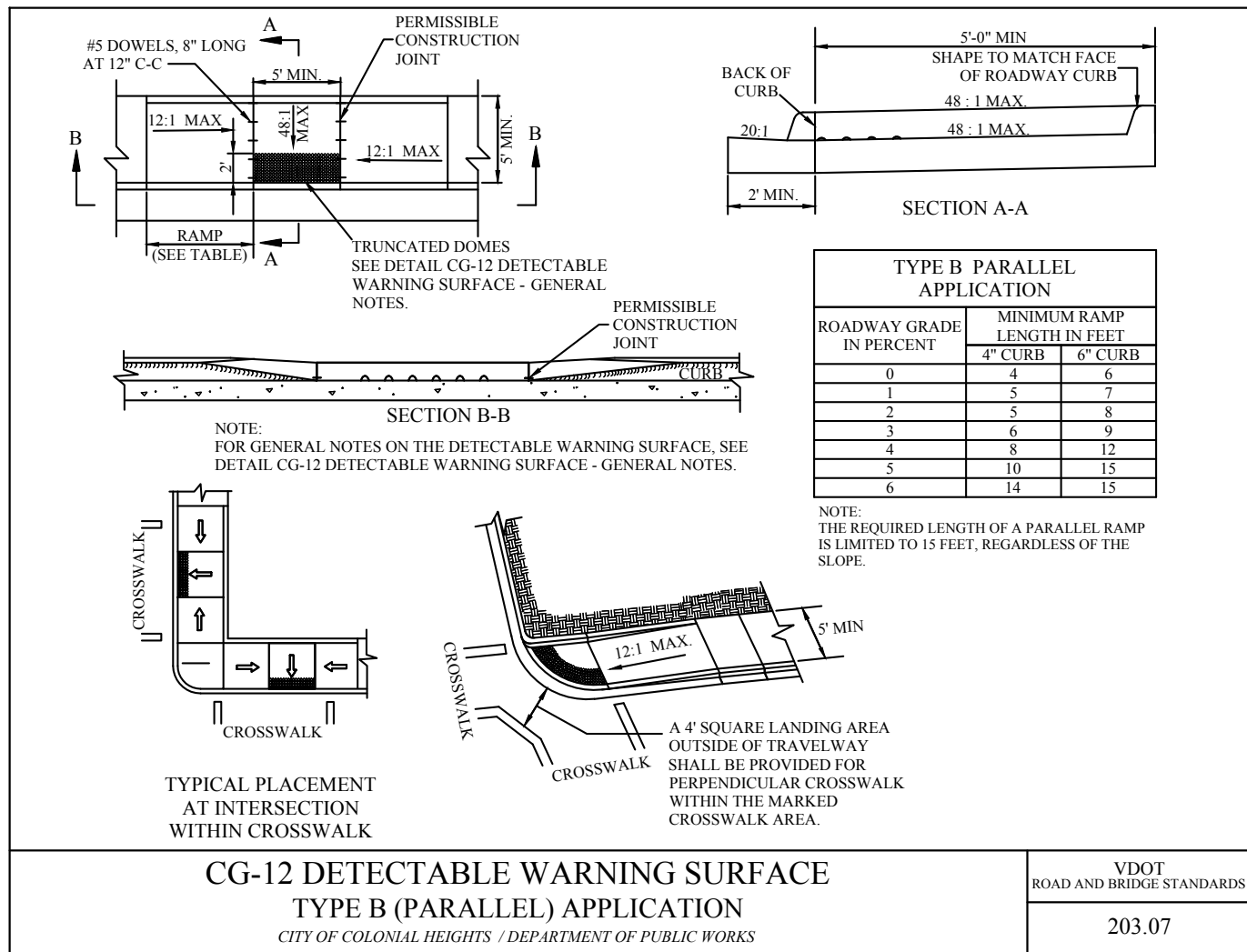
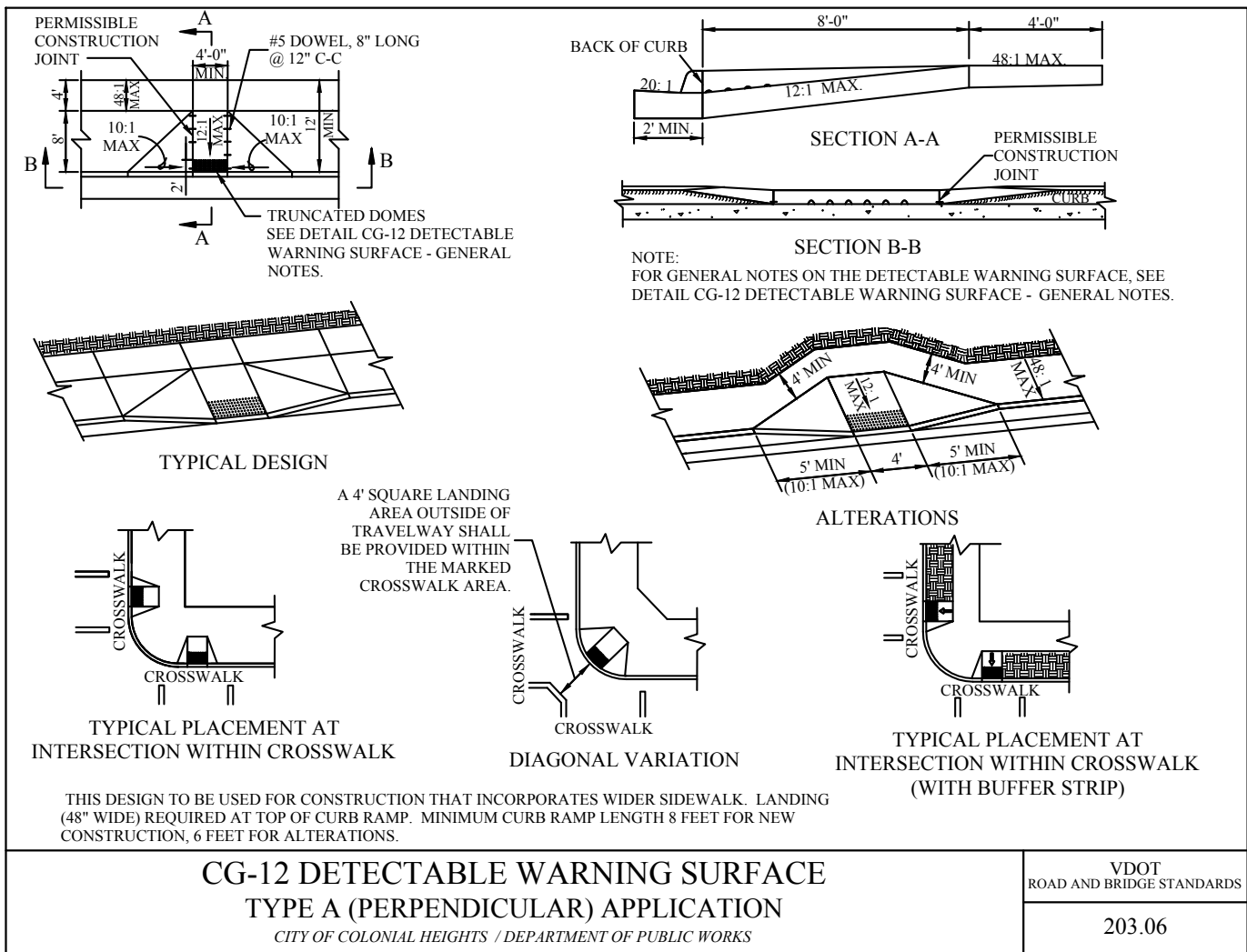
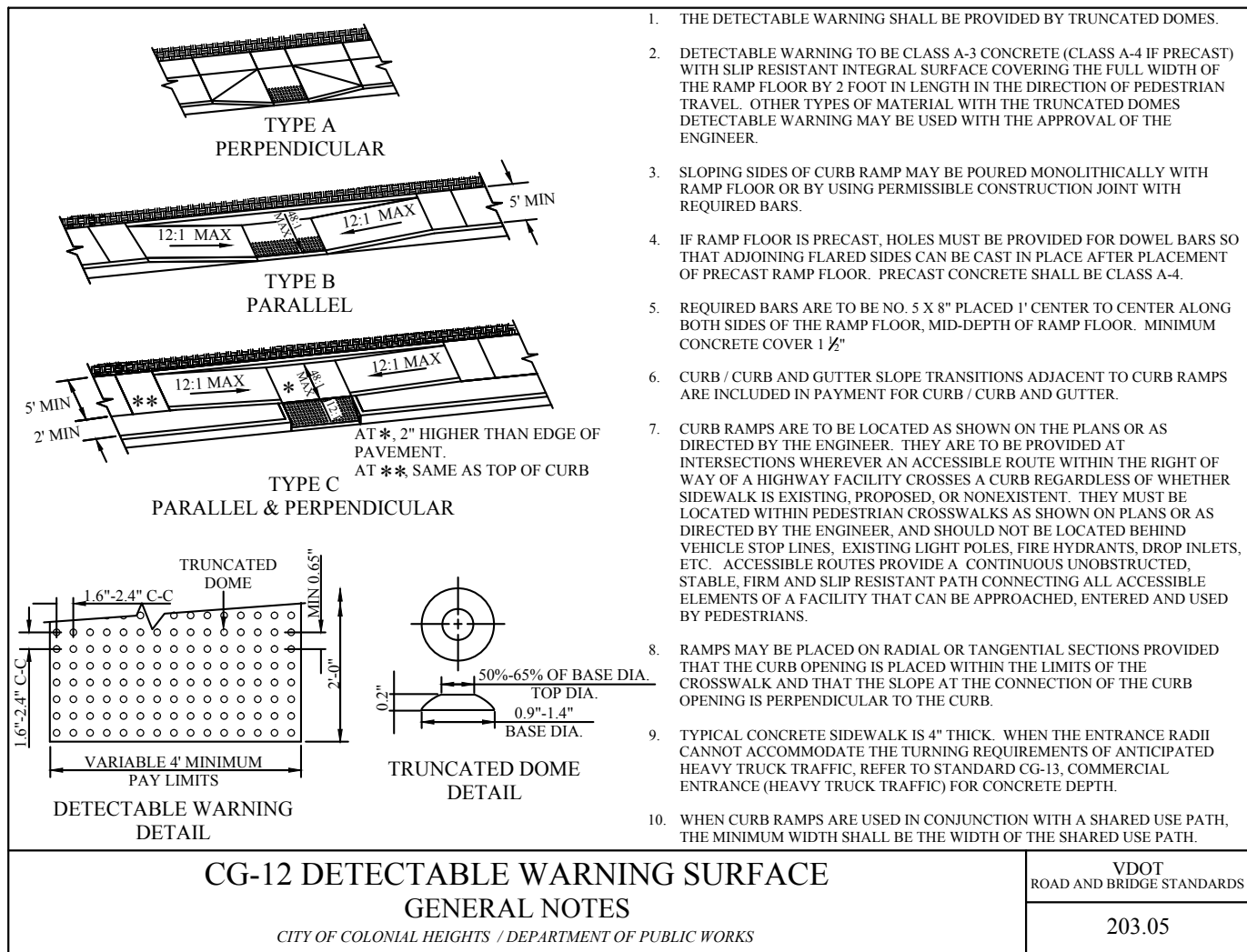
THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, CRAIG S. MACAULAY FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON MAY 13, 2014 AND THAT THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.

### TEMPORARY BENCHMARKS

- SOUTHEAST CORNER OF EXISTING CONCRETE DRAINAGE INLET, MERIDIAN AVE.  
3,614,056.1843 N, 11,798,295.4842 E  
ELEV. = 92.46'
- NORTHEAST CORNER OF EXISTING CONCRETE DRAINAGE INLET, BATTERY PLACE  
3,614,818.3110 N, 11,799,060.3560 E  
ELEV. = 89.53'
- NORTHWEST CORNER OF EXISTING CONCRETE DRAINAGE INLET, BATTERY / BRUCE INTERSECTION  
3,614,508.9960 N, 11,799,235.9700 E  
ELEV. = 90.50'
- NORTHEAST CORNER OF EXISTING CONCRETE DRAINAGE INLET, BRUCE AVE.  
3,614,797.1200 N, 11,800,091.5140 E  
ELEV. = 91.73'
- SOUTHEAST CORNER OF EXISTING CONCRETE DRAINAGE INLET, BATTERY PLACE  
3,613,977.2550 N, 11,799,719.0180 E  
ELEV. = 91.19'







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Fax: (804) 270-2008

**CITY OF COLONIAL HEIGHTS**  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING & DEVELOPMENT DIVISION

**BRUCE AVENUE DRAINAGE IMPROVEMENTS**

**STANDARD SITE DETAILS**

SHEET NO. 5 OF 31